

**Citation:** Chorooglou M, Smith E, Koerting J, *et al.* Preschool hyperactivity is associated with long-term economic burden: evidence from a longitudinal health economic analysis of costs incurred across childhood, adolescence and young adulthood. *J Child Psychol Psychiatry* 2015;**56**:966–75.

**Author's declarative title:** Pre-school hyperactivity increases costs into early adulthood.

## **Commentary**

### ***What is already known on this topic***

Attention deficit hyperactivity disorder (ADHD) is quite common in childhood, can have a major impact on the child and family and can be the source of problems that persist long into adulthood. Previous UK studies have shown long-term economic impacts through the effects on service utilisation<sup>1</sup> and disrupted employment patterns.<sup>2</sup> International evidence supports these associations across much of the life-course and demonstrates the high personal and social costs.<sup>3</sup>

### ***Methods of the study***

More than 4000 three year old children in southern England were assessed between 1989 and 1997 on a range of measures. Between 2010 and 2014, 499 of those with hyperactivity were re-contacted, 170 of whom provided follow-up data; another 88 individuals from the original sample who were non-hyperactive at age three were randomly selected and followed-up. Service use histories were obtained from parents at follow-up using retrospective reporting, along with ratings of general mental health problems. Costs were calculated for mental health and general health services, social care, special education, criminal justice, and out-of-pocket family costs. Well-conducted statistical analyses examined the links between a number of characteristics at age three and service use and associated costs in adolescence and early adulthood, focusing particularly on differences between the hyperactive and control groups.

### ***What does this paper add***

- Hyperactive pre-school children (identified using the Werry Weiss Peters Activity Scale) were found to have considerably higher service-related costs at the follow-up point compared to those without hyperactivity: after adjusting for covariates, the difference was as much as 17-fold in overall costs.
- Male gender was also a significant cost-raising factor, particularly when hyperactivity was co-morbid with conduct disorder, but no other variables were associated with cost differences.
- This study adds helpfully to our growing understanding of the long-term economic consequences of early childhood mental health problems. It is unusual in collecting data at the pre-school stage and following up quite a large group of individuals.

### ***Limitations***

- Service use was based upon self-report, which may be subject to recall bias, although there is no reason to believe it distorted the findings.
- The study did not find social deprivation to be linked to costs, but this may be because the measure was at area-level rather than family-level.
- Sample attrition was high but the authors did not think this had led to bias.

- Although there were good mental health measures at baseline, other information available for the analyses was relatively limited and so the findings may be influenced by unmeasured covariates, such as maternal mental health, which can affect a child's development, as well as public sector and other costs.<sup>4</sup>
- The study did not look at employment impacts, which can be substantial.<sup>2 5</sup>

### ***What next in research***

Future research should be seeking to uncover what effects on later costs, if any, are exerted by childhood, family and neighbourhood characteristics beyond those examined in this study and to follow children (and families) for longer into adulthood. It would also be helpful to use the evidence in this study as a platform for examining the potential economic case for interventions to address pre-school hyperactivity, for example through simulation modelling.

### ***Do these results change your practice and why?***

These results reinforce the already recognised need to identify and respond to mental health problems in childhood – in this case in the pre-school period. The immediate benefits would be seen through improvements in the health and wellbeing of the child, parents and other family members. There would also potentially be substantial longer-term economic advantages for many service sectors. Because the economic impacts of pre-school hyperactivity range across many different service sectors and budgets, and also stretch over many years, multi-agency co-ordination is essential to achieve the best results. The findings should put further pressure on service commissioners and providers to screen for and then to treat hyperactivity in early years.

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### **Section heading: Miscellaneous**

### **References**

1. D'Amico F *et al.* A 20-year follow-up of childhood hyperactivity and conduct problems: service use and public expenditure costs in adulthood. *Brit J Psychiatry* 2014;**204**:441-447.
2. Knapp M *et al.* Economic outcomes in adulthood and their associations with antisocial conduct, attention deficit and anxiety problems in childhood. *J Ment Health Policy Econ* 2011;**14**:137-147.
3. Matza LS *et al.* A review of the economic burden of ADHD. *Cost Effectiveness Resource Allocation* 2005;**3**:doi:10.1186/1478-7547-3-5.
4. Bauer A *et al.* Perinatal depression and child development: exploring the economic consequences from a South London cohort. *Psychological Medicine* 2015;**45**:51-61.
5. Fletcher JM. The effects of childhood ADHD on adult labor market outcomes. *Health Economics* 2014;**23**:159-181.

**Competing interests**

None

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